NAME: DATE:

p1020: graded take-home open-note practice exam (version 201)

Question 1

Let f represent a function. If $f[40] = 36$, then there exists a knowable solution to the equation below.

$$y = \frac{f[2\,(x - 27)]}{18} + 32$$

Find the solution.

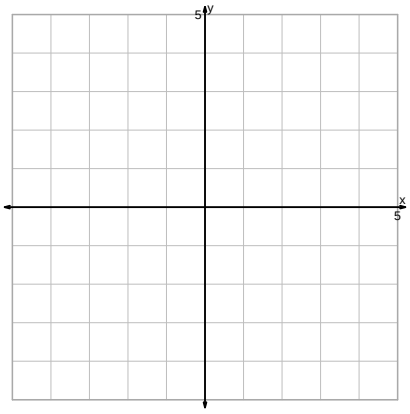
$x =$

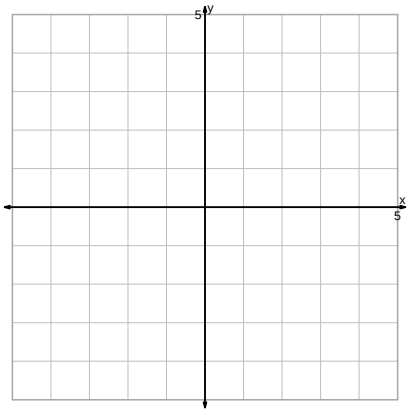
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

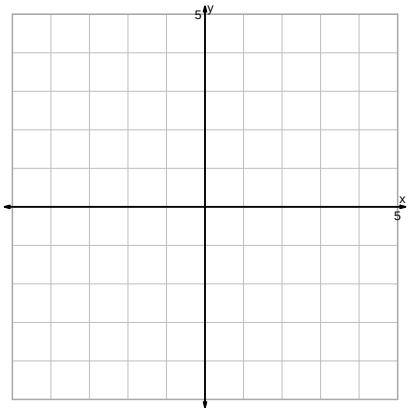
$y = 2^{\frac{x}{2}}$

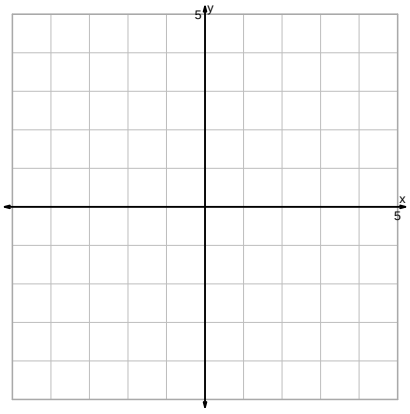




$y = x^3 - 2$

$y = \log_2(x - 2)$

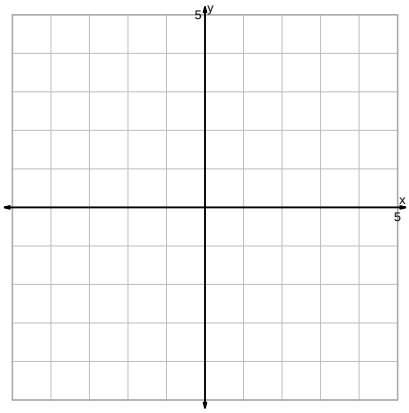


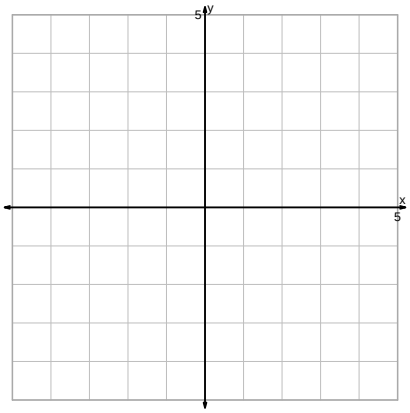


$y = \frac{\sqrt{x}}{2}$

Question 2 continued...

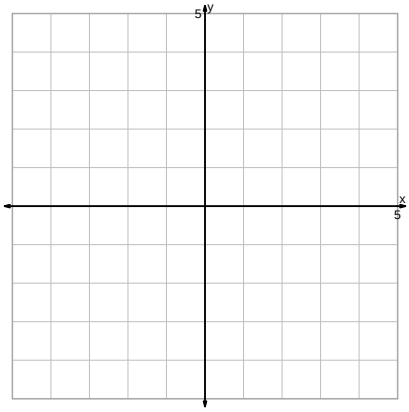
$y = 2^{-x}$

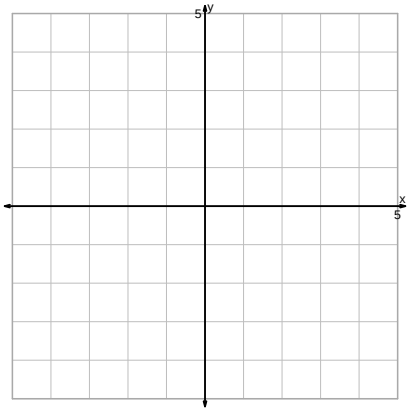




$y = 2 \cdot \sqrt[3]{x}$

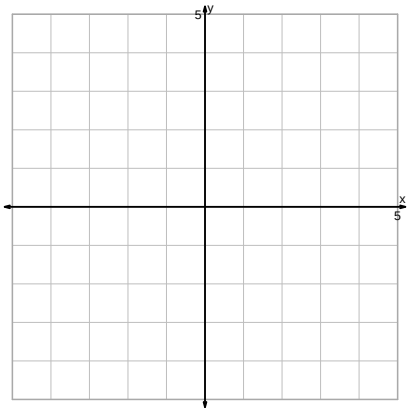
$y = -\log_2(x)$

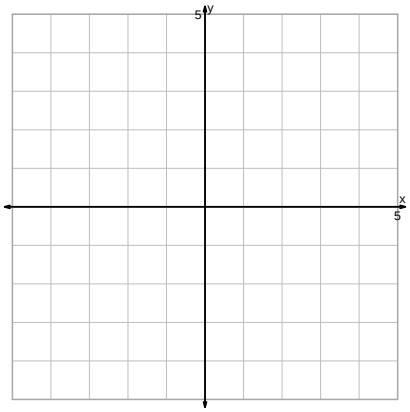




$y = x^3 + 2$

$y = \sqrt[3]{x+2}$

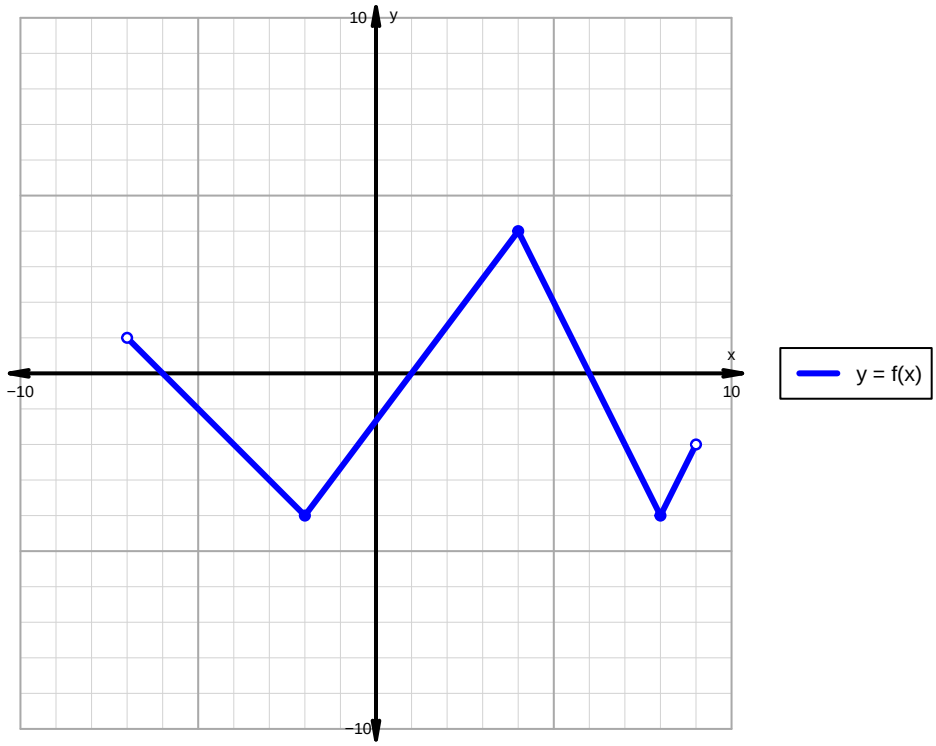




$y = (2x)^2$

Question 3

A function is graphed below.



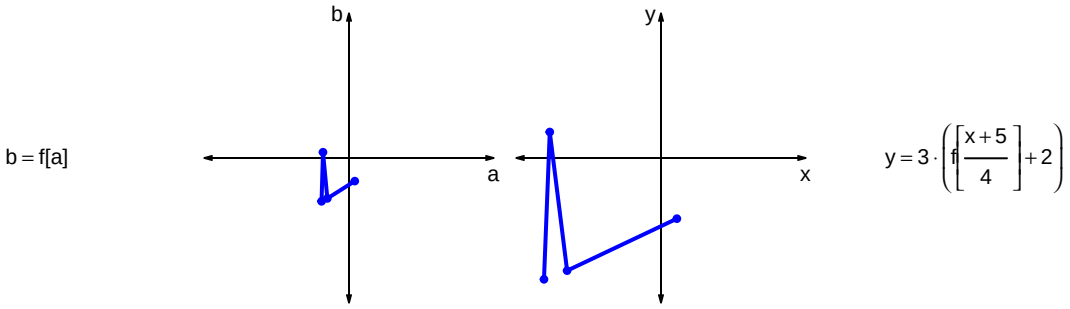
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 3 \cdot \left(f\left[\frac{x+5}{4}\right] + 2\right)$ are represented below in a table and on graphs.

a	b	x	y
-19	-30	-81	-84
-18	4	-77	18
-15	-28	-65	-78
4	-16	11	-42



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 3 \cdot \left(f\left[\frac{x+5}{4}\right] + 2\right)$?

Question 5

A parent square-root function is transformed in the following ways:

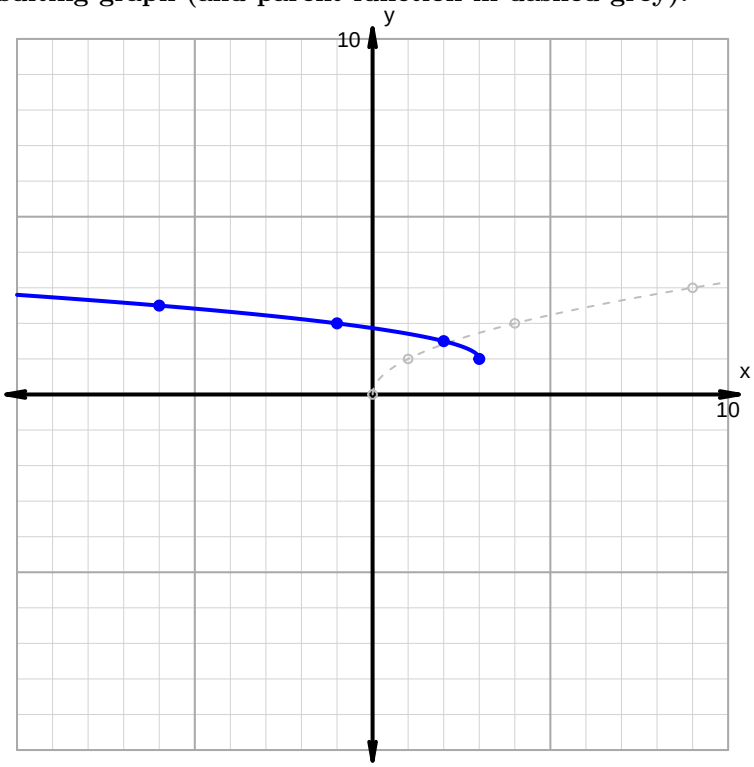
Horizontal transformations

1. Translate left by distance 3.
2. Horizontal reflection over y axis.

Vertical transformations

1. Vertical shrink by factor 2.
2. Translate up by distance 1.

Resulting graph (and parent function in dashed grey):

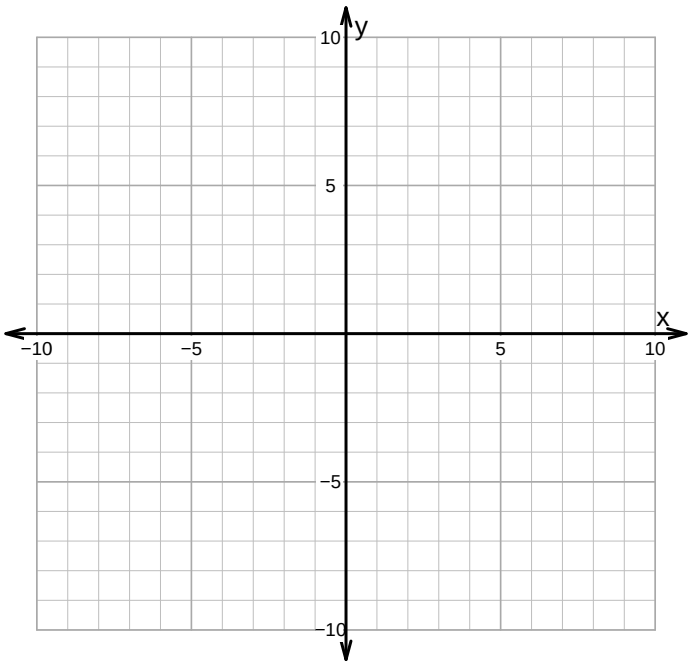


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; -3 \cdot |x - 2| + 3$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	